Abstract Submitted
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On Energy and Momentum in Contemporary Physics PETER SUJAK, Gluon o.s. — This paper analyzes the quantities of energy and momentum in the definitional relationship of classical mechanics and relativistic mechanics, in the de Broglie momentum hypothesis and in the Klein-Gordon, Dirac and Schrodinger equation. The results of analysis shows that λ designated in the de Broglie hypothesis $\lambda = h/mv$ as the wave of matter with rest state value $\lambda = \infty$ must be connected with a real dimension of a particle with rest state value $\lambda = l_o = h/m_o c$ and that on this basis we can come to the fundamental equations of quantum mechanics that are the Klein-Gordon, Dirac and Schrodinger equation without the necessity of the wave functions. Energies in relativistic mechanics as mc^2,mvc, and $m_o c^2$, and energy of a photon $h\nu$ do not represent quantities of energies, but quantity of momentums intentionally multiplied by c, so $mc \cdot c$, $mv \cdot c$, $m_o c \cdot c$, $h\nu/c \cdot c$ and merely the dimension of such quantities equals in dimension the quantity of energy.

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